

**California Regional Water Quality Control Board  
Santa Ana Region**

**January 17, 2007**

**Item:**

**Subject: Supplemental Staff Report: Proposed Basin Plan Amendment –  
Incorporation of Organochlorine Compounds Total Maximum Daily  
Loads for San Diego Creek, Upper and Lower Newport Bay,  
Orange County, California**

On November 17, 2006, staff made available for public review a staff report that discussed the technical and scientific basis of the proposed organochlorine compounds Total Maximum Daily Loads (TMDLs) for San Diego Creek, Upper and Lower Newport Bay. A public workshop was held on December 1, 2006, to present the TMDLs and to provide an opportunity for public comment.

**Errata**

Subsequent to the public workshop, staff discovered a few minor errors in calculations of existing loads for San Diego Creek. In the staff report, existing loads calculations for San Diego Creek did not use the updated partition coefficient for total 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane (DDT) and did not use the correct conversion units (short ton vs. metric ton). Corrected existing loads values are slightly higher for total DDT, and slightly lower for chlordane, polychlorinated biphenyl (PCBs) and Toxaphene. TMDLs and allocations were slightly lower for PCBs, but remained unchanged for the other organochlorine compounds, since TMDLs were equal to loading capacities for all pollutants except PCBs. (Note, however, that the TMDL for total PCBs for San Diego Creek is for information only.) Corrections to technical staff report Table 4-7, Tables 6-1a,b, and Tables 6-2a,b follow. Additions to these tables are **underlined and bold** and deletions are in ~~strikethrough~~.

**Table 4-7. Flow Characteristics and Existing Loads to San Diego Creek**

Pollutant	Fish Tissue Concentration ( $\mu\text{g}/\text{kg}$ wet)	BCF (L/kg)	Dissolved Concentration ( $\mu\text{g}/\text{L}$ )	Flow Rate (Q) (cfs)	Flow Duration ( $Q_d$ ) (days/year)	Suspended Sediment Concentration $C_s$ (mg/L)	Dissolved Fraction ( $F_d$ )	$K_d$ ( $\text{m}^3/\text{g}$ )	Existing Load (g/year)
<i>Total DDT</i>	161.5	363,000	0.0004	15	352	88	<u>0.2551 0.1960</u>	.04677	<u>22.5 29.3</u>
				365	10	1569	<u>0.0188 0.0134</u>		<u>211.3 295.3</u>
				1,595	3	4543	<u>0.006 0.0047</u>		<u>792.6 1111.6</u>
<b>Total Load-DDT</b>									<b>1026.5 1436.2</b>
<i>Chlordane**</i>	9.7	37,800	0.0003	15	352	88	<u>0.3894 0.4128</u>	.01622	<u>8.5 8.0</u>
				365	10	1569	<u>0.0344 0.0378</u>		<u>66.4 60.4</u>
				1,595	3	4543	<u>0.0122 0.0134</u>		<u>246.3 223.7</u>
<b>Total Load-Chlordane</b>									<b>321.5 292.2</b>
<i>Toxaphene</i>	10.0	52,000	0.0002	15	352	88	<u>0.8046 0.8195</u>	.00251	<u>3.1 3.0</u>
				365	10	1569	<u>0.1872 0.2024</u>		<u>9.2 8.5</u>
				1,595	3	4543	<u>0.0736 0.0806</u>		<u>30.6 27.9</u>
<b>Total Load-Toxaphene</b>									<b>42.8 39.4</b>
<i>Total PCBs**</i>	33.7	270,000	0.0001	15	352	88	<u>0.4227 0.4467</u>	.01413	<u>3.8 3.6</u>
				365	10	1569	<u>0.0393 0.0432</u>		<u>28.4 25.8</u>
				1,595	3	4543	<u>0.0139 0.0153</u>		<u>104.9 95.3</u>
<b>Total Load-PCBs</b>									<b>137.1 124.8</b>

\*Values for existing loads differ from the values calculated by USEPA (2002). Differences are due to the following: In converting from sediment yield to sediment concentration, USEPA used a metric ton conversion. Board staff calculated sediment concentration using a short ton conversion, since use of short tons is the local practice. Additionally, the log  $K_{oc}$  for total DDT was recalculated using a weighted average as opposed to the arithmetic average used by USEPA. This is because DDE>>DDD and DDT. Data used to determine the relative proportion of DDT and metabolites were obtained from the SCCWRP sediment toxicity study (2003). Fish tissue concentrations reported in the table are the geometric mean of red shiner and fathead minnow TSMP fish tissue concentration data obtained from San Diego Creek and tributaries during 2002 (n=3).

\*\*Note that TMDLs for chlordane and PCBs in San Diego Creek are for informational purposes only.

Table 6-1a. Existing Loads, Loading Capacities, TMDLs and Needed Reductions for San Diego Creek, Upper and Lower Newport Bay (expressed on a “daily” basis to be consistent with the recent D.C. Circuit Court of Appeals decision in Friends of the Earth, Inc. v. EPA, et al., No. 05-5015 [D.C. Cir.2006]).

Water Body	Pollutant	Existing Load	Loading Capacity average grams per day	TMDL	Needed Reduction
San Diego Creek and Tributaries	Total DDT	<u>2.8</u> <b><u>3.9</u></b>	1.08	1.08	2.85
	Chlordane*	<u>0.88</u> <b><u>0.80</u></b>	0.70	0.70	0.10
	Toxaphene	<u>0.12</u> <b><u>0.11</u></b>	0.02	0.02	0.09
	Total PCBs*	<u>0.38</u> <b><u>0.34</u></b>	5.30	0.38 <b><u>0.34</u></b>	Not Required
Upper Newport Bay	Total DDT	6.35	0.44	0.44	5.92
	Chlordane	1.25	0.25	0.25	0.99
	Total PCBs	0.25	2.42	0.25	Not Required
Lower Newport Bay	Total DDT	1.80	0.16	0.16	1.64
	Chlordane	0.10	0.09	0.09	0.01
	Total PCBs	0.66	0.89	0.66	Not Required

Table 6-1b. Existing Loads, Loading Capacities, TMDLs and Needed Reductions for San Diego Creek, Upper and Lower Newport Bay (expressed on an “annual” basis for implementation purposes).

Water Body	Pollutant	Existing Load	Loading Capacity grams per year	TMDL	Needed Reduction
San Diego Creek and Tributaries	Total DDT	<u>4027</u> <b><u>1436</u></b>	396	396	1040
	Chlordane*	<u>321</u> <b><u>292</u></b>	255	255	37
	Toxaphene	<u>42.8</u> <b><u>39</u></b>	6	6	33
	Total PCBs*	<u>437</u> <b><u>125</u></b>	1933	<u>-37</u> <b><u>125</u></b>	Not required

Upper Newport Bay	Total DDT	2319	160	160	2159
	Chlordane	455	93	93	362
	Total PCBs	92	884	92	Not required
Lower Newport Bay	Total DDT	656	59	59	597
	Chlordane	36	34	34	2
	Total PCBs	241	326	241	Not required

\*Note that TMDLs for chlordane and PCBs in San Diego Creek are being developed for informational purposes only.

Table 6-2a. Proposed TMDLs and Allocations for San Diego Creek, Upper and Lower Newport Bay (expressed on a “daily” basis to be consistent with the recent D.C. Circuit Court of Appeals decision in Friends of the Earth, Inc. v. EPA, et al., No. 05-5015 [D.C. Cir.2006]).

	Type	Total DDT	Chlordane	Total PCBs	Toxaphene
		(average grams/day)			
<b><i>San Diego Creek**</i></b>					
<b>WLA</b>	Urban Runoff – County MS4 (36%)	0.35	0.23	0.12 <b>0.11</b>	0.005
	Construction (28%)	0.27	0.18	0.09	0.004
	Commercial Nurseries (4%)	0.04	0.03	0.01	0.001
	Caltrans MS4 (11%)	0.11	0.07	0.04 <b>0.03</b>	0.002
	<b>Subtotal – WLA (79%)</b>	<b>0.77</b>	<b>0.50</b>	<b>0.27 <u>0.24</u></b>	<b>0.01</b>
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	0.05	0.03	0.02	0.001
	Open Space (9%)	0.09	0.06	0.03	0.001
	Streams&Channels (2%)	0.02	0.01	0.01	0.0003
	Undefined (5%)	0.05	0.03	0.02	0.001
	<b>Subtotal – LA (21%)</b>	<b>0.21</b>	<b>0.13</b>	<b>0.07 <u>0.06</u></b>	<b>0.003</b>
<b>MOS (10% of total TMDL)</b>		<b>0.11</b>	<b>0.07</b>	<b>0.04 <u>0.03</u></b>	<b>0.002</b>
<b>Total TMDL</b>		<b>1.08</b>	<b>0.70</b>	<b>0.38 <u>0.34</u></b>	<b>0.02</b>
<b><i>Upper Newport Bay</i></b>					
<b>WLA</b>	Urban Runoff - County MS4 (36%)	0.14	0.08	0.08	
	Construction (28%)	0.11	0.06	0.06	
	Commercial nurseries (4%)	0.02	0.01	0.01	
	Caltrans MS4 (11%)	0.04	0.03	0.02	
	<b>Subtotal – WLA (79%)</b>	<b>0.31</b>	<b>0.18</b>	<b>0.18</b>	
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	0.02	0.01	0.01	
	Open Space (9%)	0.04	0.02	0.02	
	Channels & Streams (2%)	0.01	<b>0.005</b>	<b>0.005</b>	
	Undefined (5%)	0.02	0.01	0.01	
	<b>Subtotal – LA (21%)</b>	<b>0.08</b>	<b>0.05</b>	<b>0.05</b>	
<b>MOS (10% of Total TMDL)</b>		<b>0.04</b>	<b>0.03</b>	<b>0.03</b>	
<b>Total TMDL</b>		<b>0.44</b>	<b>0.25</b>	<b>0.25</b>	
<b><i>Lower Newport Bay</i></b>					

<b>WLA</b>	Urban Runoff – County MS4 (36%)	0.05	0.03	0.21	
	Construction (28%)	0.04	0.02	0.17	
	Commercial Nurseries (4%)	0.01	0.003	0.02	
	Caltrans MS4 (11%)	0.02	0.01	0.07	
	<b>Subtotal – WLA (79%)</b>	<b>0.11</b>	<b>0.07</b>	<b>0.47</b>	
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	0.01	0.004	0.03	
	Open Space (9%)	0.01	0.01	0.05	
	Channels & Streams (2%)	0.003	0.002	0.01	
	Undefined (5%)	0.01	0.004	0.03	
	<b>Subtotal – LA (21%)</b>	<b>0.03</b>	<b>0.02</b>	<b>0.12</b>	
<b>MOS (10% of Total TMDL)</b>		<b>0.02</b>	<b>0.01</b>	<b>0.07</b>	
<b>Total TMDL</b>		<b>0.16</b>	<b>0.09</b>	<b>0.66</b>	

\*Percent WLA (79%) and LA (21%) is applied to the TMDL, after subtracting the 10% MOS from the Total TMDL. Percent WLA and Percent LA add to 100%.

\*\*Note that TMDLs are being developed for chlordane and PCBs in San Diego Creek for informational purposes only.

Table 6-2b. Proposed TMDLs and Allocations (Annual) for San Diego Creek, Upper and Lower Newport Bay(expressed on an "annual" basis for implementation purposes).

Category	Type	Total DDT	Chlordane	Total PCBs	Toxaphene (grams per year)
<b>San Diego Creek**</b>					
<b>WLA</b>	Urban Runoff – County MS4 (36%)	128.3	82.6	44.4	40.5
	Construction (28%)	99.8	64.3	34.5	31.5
	Commercial Nurseries (4%)	14.3	9.2	4.9	4.5
	Caltrans MS4 (11%)	39.2	25.2	13.6	12.4
	<b>Subtotal – WLA (79%)</b>	<b>281.6</b>	<b>181.3</b>	<b>97.5</b>	<b>88.9</b>
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	17.8	11.5	6.2	5.6
	Open Space (9%)	32.1	20.7	11.1	10.1
	Streams & Channels (2%)	7.1	4.6	2.5	2.3
	Undefined (5%)	17.8	11.5	6.2	5.6
	<b>Subtotal – LA (21%)</b>	<b>74.8</b>	<b>48.2</b>	<b>25.9</b>	<b>23.6</b>
<b>MCS</b> (10% of Total TMDL)		40	26	14.13	0.6
<b>Total TMDL</b>		<b>396</b>	<b>255</b>	<b>137</b>	<b>125</b>
<b>Upper Newport Bay</b>					
<b>WLA</b>	Urban Runoff – County MS4 (36%)	51.8	30.1	29.8	
	Construction (28%)	40.3	23.4	23.2	
	Commercial Nurseries (4%)	5.8	3.3	3.3	
	Caltrans MS4 (11%)	15.8	9.2	9.1	
	<b>Subtotal – WLA (79%)</b>	<b>113.8</b>	<b>66.1</b>	<b>65.4</b>	
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	7.2	8	7	
	Open Space (9%)	13.0	7.6	7.5	
	Streams & Channels (2%)	2.9	1.7	1.7	
	Undefined (5%)	7.2	4.2	4.2	
	<b>Subtotal – LA (21%)</b>	<b>30.2</b>	<b>21.4</b>	<b>20.3</b>	
<b>MCS</b> (10% of Total TMDL)		16	9	9	
<b>Total TMDL</b>		<b>160</b>	<b>93</b>	<b>92</b>	
<b>Lower Newport Bay</b>					
<b>WLA</b>	Urban Runoff – County MS4 (36%)	19.1	11.0	78.1	
	Construction (28%)	14.9	8.6	60.7	
	Commercial Nurseries (4%)	2.1	1.2	8.7	
	Caltrans MS4 (11%)	5.8	3.4	23.9	

	<b>Subtotal – WLA (79%)</b>	<b>41.9</b>	<b>24.2</b>	<b>171.4</b>	
<b>LA</b>	Agriculture (5%) (excludes nurseries under WDRs)	2.7	1.5	10.8	
	Open Space (9%)	4.8	2.8	19.5	
	Streams & Channels (2%)	1.1	0.6	4.3	
	Undefined (5%)	2.7	1.5	10.8	
	<b>Subtotal – LA (21%)</b>	<b>11.2</b>	<b>6.4</b>	<b>45.5</b>	
<b>MOS (10% of Total TMDL)</b>		<b>5.9</b>	<b>3.4</b>	<b>24</b>	
<b>Total TMDL</b>		<b>59</b>	<b>34</b>	<b>241</b>	

\*Percent WLA (79%) is applied to the TMDL, after subtracting the 10% MOS. Percent WLA and Percent LA add to 100%.

\*\*Note that TMDLs are being developed for chlordane and PCBs in San Diego Creek for informational purposes only.

To address these corrections in the proposed Basin Plan Amendment, Attachment A to draft Resolution no. R8-2007-0024, appropriate changes have been made to Table NB-OCs-8, Table NB-OCs-11, and Table NB-OCs-12. Additions to these tables are shown **underlined and bold** and deletions are shown as ~~strike through~~.

Table NB-OCs-8. Informational TMDLs for San Diego Creek and Tributaries (expressed on average daily and annual basis)

Water Body	Pollutant	TMDL (average grams per day)
San Diego Creek and Tributaries	Chlordane	0.70
	Total PCBs	<del>0.31</del> <b><u>0.34</u></b>
		<b><u>TMDL</u></b> <b><u>(grams per year)</u></b>
San Diego Creek and Tributaries	Chlordane	255
	Total PCBs	<del>414</del> <b><u>125</u></b>

Table NB-OCs-11. Informational TMDLs and Allocations for San Diego Creek (expressed on a "daily" basis).<sup>a</sup>

Category	Type	Chlordane (average grams per day)	Total PCBs (average grams per day)
<b><i>San Diego Creek</i></b>			
WLA	Urban Runoff – County MS4 (36%)	<b><u>0.23</u></b>	<b><u>0.11</u></b>
	Construction (28%)	<del>0.23</del> <b><u>0.18</u></b>	<del>0.10</del> <b><u>0.09</u></b>
	Commercial Nurseries (4%)	<del>0.18</del> <b><u>0.03</u></b>	<del>0.08</del> <b><u>0.01</u></b>
	Caltrans MS4 (11%)	<del>0.03</del> <b><u>0.07</u></b>	<del>0.01</del> <b><u>0.03</u></b>
	<b><u>Subtotal – WLA (79%)</u></b>	<b><u>0.07</u></b> <b><u>0.50</u></b>	<b><u>0.03</u></b> <b><u>0.24</u></b>
LA	Agriculture (5%) (excludes nurseries under WDRs)	<b><u>0.50</u></b> <b><u>0.03</u></b>	<b><u>0.22</u></b> <b><u>0.02</u></b>
	Open Space (9%)	<del>0.03</del> <b><u>0.06</u></b>	<del>0.01</del> <b><u>0.03</u></b>
	Streams & Channels (2%)	<del>0.06</del> <b><u>0.01</u></b>	<del>0.03</del> <b><u>0.01</u></b>
	Undefined (5%)	<del>0.01</del> <b><u>0.03</u></b>	<del>0.01</del> <b><u>0.02</u></b>
	<b><u>Subtotal – LA (21%)</u></b>	<b><u>0.03</u></b> <b><u>0.13</u></b>	<b><u>0.01</u></b> <b><u>0.06</u></b>
MOS (10% of total TMDL)		<b><u>0.13</u></b> <b><u>0.07</u></b>	<b><u>0.06</u></b> <b><u>0.03</u></b>
<b>Total TMDL</b>		<b><u>0.07</u></b> <b><u>0.70</u></b>	<b><u>0.03</u></b> <b><u>0.34</u></b>

<sup>a</sup> Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the 10% MOS from the Total TMDL.. Percent WLA and Percent LA add to 100%.

Table NB-OCs-12. Informational TMDLs and Allocations (Annual) for San Diego Creek (expressed on an “annual” basis)<sup>a</sup>.

Category	Type	Chlordane	Total PCBs
		(grams per year)	
<b><i>San Diego Creek</i></b>			
WLA	Urban Runoff – County MS4 (36%)	82.6	<b>36.9 40.5</b>
	Construction (28%)	64.3	<b>28.7 31.5</b>
	Commercial Nurseries (4%)	9.2	<b>4.1 4.5</b>
	Caltrans MS4 (11%)	25.2	<b>11.3 12.4</b>
	<b>Subtotal – WLA (79%)</b>	181.3	<b>81.1 88.9</b>
LA	Agriculture (5%) (excludes nurseries under WDRs)	11.5	<b>5.1 5.6</b>
	Open Space (9%)	20.7	<b>9.2 10.1</b>
	Streams & Channels (2%)	4.6	<b>2.1 2.3</b>
	Undefined (5%)	11.5	<b>5.1 5.6</b>
	<b>Subtotal – LA (21%)</b>	48.2	<b>21.5 23.6</b>
MOS (10% of total TMDL)		26	<b>11 13</b>
<b>Total TMDL</b>		<b>255</b>	<b>114 125</b>

<sup>a</sup>. Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the 10% MOS from the total TMDL. Percent WLA and Percent LA add to 100%.

## **Comments Received to Date**

Comments have been received from the following interested parties:

Commenter	Affiliation
Robert Dickson	Latham and Watkins, LLP
Jason S. Retterer, Esq.	WSS, Law for the City of Tustin
John F. Skinner, MD	None
Robert Caustin	Defend the Bay
Andrew R. Henderson	Building Industry Legal Defense Foundation
Carollyn B. Lobell	Nossaman, Guthner, Knox & Elliott, LLP
Mary Lynn Coffee	Nossaman, Guthner, Knox & Elliott, LLP
Peter Kozelka	USEPA, Region 9
Chris Crompton	County of Orange, Environmental Resources
Daniel W. Anderson	U.C. Davis
Joseph Skorupa	U.S. Fish and Wildlife Service

Board staff is preparing written responses to these comments and any comments received up two weeks prior to the public hearing will be provided.

**Recommendation**

Adopt Resolution No. 2007-0024, adopting the amendment to the Basin Plan shown in Attachment A to incorporate Organochlorine Compounds TMDLs for San Diego Creek, Upper and Lower Newport Bay. Orange County, California.